

## SEQUENCE LISTING

<110> Bayer CropScience GmbH

<120> Plant cells and plants which synthesize a starch with an increased final viscosity

<130> BCS 02 5002 - PCT

<150> EP 02028530.0

<151> 2002-12-19

<150> EP 03090275.3

<151> 2003-08-29

<160> 8

<170> PatentIn version 3.1

<210> 1

<211> 4167

<212> DNA

<213> Solanum tuberosum

<220>

<221> CDS

<222> (207) .. (3899)

<223>

<300>

<301> Abel, G.J., Springer, F., Willmitzer, L. and Kossmann, J.

<302> Cloning and functional analysis of a cDNA encoding a novel  
139 kDa

<303> Plant J.

<304> 10

<305> 6

<306> 981-991

<307> 1996

<308> X94400

<309> 1995-12-22

<313> (1)..(4167)

<300>

<308> EMBL / X94400

<309> 1997-04-16

<313> (1)..(4167)

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120

gatgttctat ttgattctgt ggtgaacaag agttttacaa agaacattcc tttttctttt  
180

tttcttggtt cttgtgtggg tcagcc atg gat gtt cca ttt cca ctg cat aga  
233

Met Asp Val Pro Phe Pro Leu His Arg

1

5

cca ttg agt tgc aca agt gtc tcc aat gca ata acc cac ctc aag atc  
281

Pro Leu Ser Cys Thr Ser Val Ser Asn Ala Ile Thr His Leu Lys Ile

10

15

20

25

aaa cct ttt ctt ggg ttt gtc tct cat gga acc aca agt cta tca gta  
329

Lys Pro Phe Leu Gly Phe Val Ser His Gly Thr Thr Ser Leu Ser Val

30

35

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caa tct tct tca tgg agg aag gat gga atg gtt act ggg gtt tca ttt  
377

Gln Ser Ser Ser Trp Arg Lys Asp Gly Met Val Thr Gly Val Ser Phe

45

50

55

cca ttt tgt gca aat ctc tcg gga aga aga cgg aga aaa gtt tca act  
425

Pro Phe Cys Ala Asn Leu Ser Gly Arg Arg Arg Arg Lys Val Ser Thr

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65

70

act agg agt caa gga tct tca cct aag ggg ttt gtg cca agg aag ccc  
473

Thr Arg Ser Gln Gly Ser Ser Pro Lys Gly Phe Val Pro Arg Lys Pro

75

80

85

tca ggg atg agc acg caa aga aag gtt cag aag agc aat ggt gat aaa  
521

Ser Gly Met Ser Thr Gln Arg Lys Val Gln Lys Ser Asn Gly Asp Lys

90

95

100

105

gaa agt caa agt act tca aca tct aaa gaa tct gaa att tcc aac cag  
569

Glu Ser Gln Ser Thr Ser Thr Ser Lys Glu Ser Glu Ile Ser Asn Gln

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115

120

aag acg gtt gaa gca aga gtt gaa act agt gac gat gac act aaa gta  
 617  
 Lys Thr Val Glu Ala Arg Val Glu Thr Ser Asp Asp Asp Thr Lys Val

125

130

135

gtg gtg agg gac cac aag ttt ctg gag gat gag gat gaa atc aat ggt  
 665  
 Val Val Arg Asp His Lys Phe Leu Glu Asp Glu Asp Glu Ile Asn Gly

140

145

150

tct act aaa tca ata agt atg tca cct gtt cgt gta tca tct caa ttt  
 713  
 Ser Thr Lys Ser Ile Ser Met Ser Pro Val Arg Val Ser Ser Gln Phe

155

160

165

gtt gaa agt gaa gaa act ggt ggt gat gac aag gat gct gta aag tta  
 761  
 Val Glu Ser Glu Glu Thr Gly Gly Asp Asp Lys Asp Ala Val Lys Leu

170

175

180

185

aac aaa tca aag aga tcg gaa gag agt gat ttt cta att gat tct gta  
 809  
 Asn Lys Ser Lys Arg Ser Glu Glu Ser Asp Phe Leu Ile Asp Ser Val

190

195

200

ata aga gaa caa agt gga tct cag ggg gaa act aat gcc agt agc aag  
 857  
 Ile Arg Glu Gln Ser Gly Ser Gln Gly Glu Thr Asn Ala Ser Ser Lys

205

210

215

gga agc cat gct gtg ggt aca aaa ctt tat gag ata ttg cag gtg gat  
 905  
 Gly Ser His Ala Val Gly Thr Lys Leu Tyr Glu Ile Leu Gln Val Asp

220

225

230

gtt gag cca caa caa ttg aaa gaa aat aat gct ggg aat gtt gaa tac

953

Val Glu Pro Gln Gln Leu Lys Glu Asn Asn Ala Gly Asn Val Glu Tyr

235

240

245

aaa gga cct gta gca agt aag cta ttg gaa att act aag gct agt gat  
1001

Lys Gly Pro Val Ala Ser Lys Leu Leu Glu Ile Thr Lys Ala Ser Asp

250

255

260

265

gtg gaa cac act gaa agc aat gag att gat gac tta gac act aat agt  
1049

Val Glu His Thr Glu Ser Asn Glu Ile Asp Asp Leu Asp Thr Asn Ser

270

275

280

ttc ttt aaa tca gat tta att gaa gag gat gag cca tta gct gca gga  
1097

Phe Phe Lys Ser Asp Leu Ile Glu Glu Asp Glu Pro Leu Ala Ala Gly

285

290

295

aca gtg gag act gga gat tct tct cta aac tta aga ttg gag atg gaa  
1145

Thr Val Glu Thr Gly Asp Ser Ser Leu Asn Leu Arg Leu Glu Met Glu

300

305

310

gca aat cta cgt agg cag gct ata gaa agg ctt gcc gag gaa aat tta  
1193

Ala Asn Leu Arg Arg Gln Ala Ile Glu Arg Leu Ala Glu Glu Asn Leu

315

320

325

ttg caa ggg atc aga tta ttt tgt ttt cca gag gtt gta aaa cct gat  
1241

Leu Gln Gly Ile Arg Leu Phe Cys Phe Pro Glu Val Val Lys Pro Asp

330

335

340

345

gaa gat gtc gag ata ttt ctt aac aga ggt ctt tcc act ttg aag aat  
1289

Glu Asp Val Glu Ile Phe Leu Asn Arg Gly Leu Ser Thr Leu Lys Asn

350	355	360
gag tct gat gtc ttg att atg gga gct ttt aat gag tgg cgc tat agg 1337		
Glu Ser Asp Val Leu Ile Met Gly Ala Phe Asn Glu Trp Arg Tyr Arg		
365	370	375
tct ttt act aca agg cta act gag act cat ctc aat gga gat tgg tgg 1385		
Ser Phe Thr Thr Arg Leu Thr Glu Thr His Leu Asn Gly Asp Trp Trp		
380	385	390
tct tgc aag atc cat gtt ccc aag gaa gca tac agg gct gat ttt gtg 1433		
Ser Cys Lys Ile His Val Pro Lys Glu Ala Tyr Arg Ala Asp Phe Val		
395	400	405
ttt ttt aat gga caa gat gtc tat gac aac aat gat gga aat gac ttc 1481		
Phe Phe Asn Gly Gln Asp Val Tyr Asp Asn Asn Asp Gly Asn Asp Phe		
410	415	420
agt ata act gtg aaa ggt ggt atg caa atc att gac ttt gaa aat ttc 1529		
Ser Ile Thr Val Lys Gly Gly Met Gln Ile Ile Asp Phe Glu Asn Phe		
430	435	440
ttg ctt gag gag aaa tgg aga gaa cag gag aaa ctt gct aaa gaa caa 1577		
Leu Leu Glu Glu Lys Trp Arg Glu Gln Glu Lys Leu Ala Lys Glu Gln		
445	450	455
gct gaa aga gaa aga cta gcg gaa gaa caa aga cga ata gaa gca gag 1625		
Ala Glu Arg Glu Arg Leu Ala Glu Glu Gln Arg Arg Ile Glu Ala Glu		
460	465	470

aaa gct gaa att gaa gct gac aga gca caa gca aag gaa gag gct gca  
1673

Lys Ala Glu Ile Glu Ala Asp Arg Ala Gln Ala Lys Glu Glu Ala Ala

475

480

485

aag aaa aag aaa gta ttg cga gaa ttg atg gta aaa gcc acg aag act  
1721

Lys Lys Lys Lys Val Leu Arg Glu Leu Met Val Lys Ala Thr Lys Thr

490

495

500

505

cgt gat atc acg tgg tac ata gag cca agt gaa ttt aaa tgc gag gac  
1769

Arg Asp Ile Thr Trp Tyr Ile Glu Pro Ser Glu Phe Lys Cys Glu Asp

510

515

520

aag gtc agg tta tac tat aac aaa agt tca ggt cct ctc tcc cat gct  
1817

Lys Val Arg Leu Tyr Tyr Asn Lys Ser Ser Gly Pro Leu Ser His Ala

525

530

535

aag gac ttg tgg atc cac gga gga tat aat aat tgg aag gat ggt ttg  
1865

Lys Asp Leu Trp Ile His Gly Gly Tyr Asn Asn Trp Lys Asp Gly Leu

540

545

550

tct att gtc aaa aag ctt gtt aaa tct gag aga ata gat ggt gat tgg  
1913

Ser Ile Val Lys Lys Leu Val Lys Ser Glu Arg Ile Asp Gly Asp Trp

555

560

565

tgg tat aca gag gtt gtt att cct gat cag gca ctt ttc ttg gat tgg  
1961

Trp Tyr Thr Glu Val Val Ile Pro Asp Gln Ala Leu Phe Leu Asp Trp

570

575

580

585

gtt ttt gct gat ggt cca ccc aag cat gcc att gct tat gat aac aat  
2009

Val Phe Ala Asp Gly Pro Pro Lys His Ala Ile Ala Tyr Asp Asn Asn

590	595	600
cac cgc caa gac ttc cat gcc att gtc ccc aac cac att ccg gag gaa 2057		
His Arg Gln Asp Phe His Ala Ile Val Pro Asn His Ile Pro Glu Glu		
605	610	615
tta tat tgg gtt gag gaa gaa cat cag atc ttt aag aca ctt cag gag 2105		
Leu Tyr Trp Val Glu Glu Glu His Gln Ile Phe Lys Thr Leu Gln Glu		
620	625	630
gag aga agg ctt aga gaa gcg gct atg cgt gct aag gtt gaa aaa aca 2153		
Glu Arg Arg Leu Arg Glu Ala Ala Met Arg Ala Lys Val Glu Lys Thr		
635	640	645
gca ctt ctg aaa act gaa aca aag gaa aga act atg aaa tca ttt tta 2201		
Ala Leu Leu Lys Thr Glu Thr Lys Glu Arg Thr Met Lys Ser Phe Leu		
650	655	660
ctg tct cag aag cat gta gta tat act gag cct ctt gat atc caa gct 2249		
Leu Ser Gln Lys His Val Val Tyr Thr Glu Pro Leu Asp Ile Gln Ala		
670	675	680
gga agc agc gtc aca gtt tac tat aat ccc gcc aat aca gta ctt aat 2297		
Gly Ser Ser Val Thr Val Tyr Tyr Asn Pro Ala Asn Thr Val Leu Asn		
685	690	695
ggt aaa cct gaa att tgg ttc aga tgt tca ttt aat cgc tgg act cac 2345		
Gly Lys Pro Glu Ile Trp Phe Arg Cys Ser Phe Asn Arg Trp Thr His		
700	705	710



cgc ctg ggt cca ttg cca cct cag aaa atg tcg cct gct gaa aat ggc  
2393

Arg Leu Gly Pro Leu Pro Pro Gln Lys Met Ser Pro Ala Glu Asn Gly

715

720

725

acc cat gtc aga gca act gtg aag gtt cca ttg gat gca tat atg atg  
2441

Thr His Val Arg Ala Thr Val Lys Val Pro Leu Asp Ala Tyr Met Met

730

735

740

745

gat ttt gta ttt tcc gag aga gaa gat ggt ggg att ttt gac aat aag  
2489

Asp Phe Val Phe Ser Glu Arg Glu Asp Gly Gly Ile Phe Asp Asn Lys

750

755

760

agc gga atg gac tat cac ata cct gtg ttt gga gga gtc gct aaa gaa  
2537

Ser Gly Met Asp Tyr His Ile Pro Val Phe Gly Gly Val Ala Lys Glu

765

770

775

cct cca atg cat att gtc cat att gct gtc gaa atg gca cca att gca  
2585

Pro Pro Met His Ile Val His Ile Ala Val Glu Met Ala Pro Ile Ala

780

785

790

aag gtg gga ggc ctt ggt gat gtt gtt act agt ctt tcc cgt gct gtt  
2633

Lys Val Gly Gly Leu Gly Asp Val Val Thr Ser Leu Ser Arg Ala Val

795

800

805

caa gat tta aac cat aat gtg gat att atc tta cct aag tat gac tgt  
2681

Gln Asp Leu Asn His Asn Val Asp Ile Ile Leu Pro Lys Tyr Asp Cys

810

815

820

825

ttg aag atg aat aat gtg aag gac ttt cgg ttt cac aaa aac tac ttt  
2729

Leu Lys Met Asn Asn Val Lys Asp Phe Arg Phe His Lys Asn Tyr Phe  
 830 835 840

tgg ggt ggg act gaa ata aaa gta tgg ttt gga aag gtg gaa ggt ctc  
 2777  
 Trp Gly Gly Thr Glu Ile Lys Val Trp Phe Gly Lys Val Glu Gly Leu  
 845 850 855

tcg gtc tat ttt ttg gag cct caa aac ggg tta ttt tcg aaa ggg tgc  
 2825  
 Ser Val Tyr Phe Leu Glu Pro Gln Asn Gly Leu Phe Ser Lys Gly Cys  
 860 865 870

gtc tat ggt tgt agc aat gat ggt gaa cga ttt ggt ttc ttc tgt cac  
 2873  
 Val Tyr Gly Cys Ser Asn Asp Gly Glu Arg Phe Gly Phe Phe Cys His  
 875 880 885

gcg gct ttg gag ttt ctt ctg caa ggt gga ttt agt ccg gat atc att  
 2921  
 Ala Ala Leu Glu Phe Leu Leu Gln Gly Gly Phe Ser Pro Asp Ile Ile  
 890 895 900 905

cat tgc cat gat tgg tct agt gct cct gtt gct tgg ctc ttt aag gaa  
 2969  
 His Cys His Asp Trp Ser Ser Ala Pro Val Ala Trp Leu Phe Lys Glu  
 910 915 920

caa tat aca cac tat ggt cta agc aaa tct cgt ata gtc ttc acg ata  
 3017  
 Gln Tyr Thr His Tyr Gly Leu Ser Lys Ser Arg Ile Val Phe Thr Ile  
 925 930 935

cat aat ctt gaa ttt ggg gca gat ctc att ggg aga gca atg act aac  
 3065  
 His Asn Leu Glu Phe Gly Ala Asp Leu Ile Gly Arg Ala Met Thr Asn  
 940 945 950

gca gac aaa gct aca aca gtt tca cca act tac tca cag gag gtg tct  
3113

Ala Asp Lys Ala Thr Thr Val Ser Pro Thr Tyr Ser Gln Glu Val Ser

955

960

965

gga aac cct gta att gcg cct cac ctt cac aag ttc cat ggt ata gtg  
3161

Gly Asn Pro Val Ile Ala Pro His Leu His Lys Phe His Gly Ile Val

970

975

980

985

aat ggg att gac cca gat att tgg gat cct tta aac gat aag ttc att  
3209

Asn Gly Ile Asp Pro Asp Ile Trp Asp Pro Leu Asn Asp Lys Phe Ile

990

995

1000

ccg att ccg tac acc tca gaa aac gtt gtt gaa ggc aaa aca gca  
3254

Pro Ile Pro Tyr Thr Ser Glu Asn Val Val Glu Gly Lys Thr Ala

1005

1010

1015

gcc aag gaa gct ttg cag cga aaa ctt gga ctg aaa cag gct gac  
3299

Ala Lys Glu Ala Leu Gln Arg Lys Leu Gly Leu Lys Gln Ala Asp

1020

1025

1030

ctt cct ttg gta gga att atc acc cgc tta act cac cag aaa gga  
3344

Leu Pro Leu Val Gly Ile Ile Thr Arg Leu Thr His Gln Lys Gly

1035

1040

1045

atc cac ctc att aaa cat gct att tgg cgc acc ttg gaa cgg aac  
3389

Ile His Leu Ile Lys His Ala Ile Trp Arg Thr Leu Glu Arg Asn

1050

1055

1060

gga cag gta gtc ttg ctt ggt tct gct cct gat cct agg gta caa

3434  
 Gly Gln Val Val Leu Leu Gly Ser Ala Pro Asp Pro Arg Val Gln  
 1065 1070 1075  
  
 aac gat ttt gtt aat ttg gca aat caa ttg cac tcc aaa tat aat  
 3479  
 Asn Asp Phe Val Asn Leu Ala Asn Gln Leu His Ser Lys Tyr Asn  
 1080 1085 1090  
  
 gac cgc gca cga ctc tgt cta aca tat gac gag cca ctt tct cac  
 3524  
 Asp Arg Ala Arg Leu Cys Leu Thr Tyr Asp Glu Pro Leu Ser His  
 1095 1100 1105  
  
 ctg ata tat gct ggt gct gat ttt att cta gtt cct tca ata ttt  
 3569  
 Leu Ile Tyr Ala Gly Ala Asp Phe Ile Leu Val Pro Ser Ile Phe  
 1110 1115 1120  
  
 gag cca tgt gga cta aca caa ctt acc gct atg aga tat ggt tca  
 3614  
 Glu Pro Cys Gly Leu Thr Gln Leu Thr Ala Met Arg Tyr Gly Ser  
 1125 1130 1135  
  
 att cca gtc gtg cgt aaa act gga gga ctt tat gat act gta ttt  
 3659  
 Ile Pro Val Val Arg Lys Thr Gly Gly Leu Tyr Asp Thr Val Phe  
 1140 1145 1150  
  
 gat gtt gac cat gac aaa gag aga gca caa cag tgt ggt ctt gaa  
 3704  
 Asp Val Asp His Asp Lys Glu Arg Ala Gln Gln Cys Gly Leu Glu  
 1155 1160 1165  
  
 cca aat gga ttc agc ttt gat gga gca gat gct ggc gga gtt gat  
 3749  
 Pro Asn Gly Phe Ser Phe Asp Gly Ala Asp Ala Gly Gly Val Asp

1170

1175

1180

tat gct ctg aat aga gct ctc tct gct tgg tac gat ggt cgg gat  
3794

Tyr Ala Leu Asn Arg Ala Leu Ser Ala Trp Tyr Asp Gly Arg Asp

1185

1190

1195

tgg ttc aac tct tta tgc aag cag gtc atg gaa caa gat tgg tct  
3839

Trp Phe Asn Ser Leu Cys Lys Gln Val Met Glu Gln Asp Trp Ser

1200

1205

1210

tgg aac cga cct gct ctt gat tat ttg gag ctt tac cat gct gct  
3884

Trp Asn Arg Pro Ala Leu Asp Tyr Leu Glu Leu Tyr His Ala Ala

1215

1220

1225

aga aag tta gaa tag ttagtttgtg agatgctagc agaaaaattc acgagatctg  
3939

Arg Lys Leu Glu

1230

caatctgtac aggttcagtg tttgcgtctg gacagctttt ttatttccta tatcaaagta  
3999

taaatcaagt ctacactgag atcaatagca gacagtcctc agttcatttc attttttgtg  
4059

caacatatga aagagcttag cctctaataa tgtagtcatt gatgattatt tgttttggga  
4119

agaaatgaga aatcaaagga tgcaaaatac tctgaaaaaa aaaaaaaa  
4167

<210> 2

<211> 1230

<212> PRT

<213> Solanum tuberosum

&lt;400&gt; 2

Met Asp Val Pro Phe Pro Leu His Arg Pro Leu Ser Cys Thr Ser Val  
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Ser Asn Ala Ile Thr His Leu Lys Ile Lys Pro Phe Leu Gly Phe Val  
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Ser His Gly Thr Thr Ser Leu Ser Val Gln Ser Ser Ser Trp Arg Lys  
 35 40 45

Asp Gly Met Val Thr Gly Val Ser Phe Pro Phe Cys Ala Asn Leu Ser  
 50 55 60

Gly Arg Arg Arg Arg Lys Val Ser Thr Thr Arg Ser Gln Gly Ser Ser  
 65 70 75 80

Pro Lys Gly Phe Val Pro Arg Lys Pro Ser Gly Met Ser Thr Gln Arg  
 85 90 95

Lys Val Gln Lys Ser Asn Gly Asp Lys Glu Ser Gln Ser Thr Ser Thr  
 100 105 110

Ser Lys Glu Ser Glu Ile Ser Asn Gln Lys Thr Val Glu Ala Arg Val  
 115 120 125

Glu Thr Ser Asp Asp Asp Thr Lys Val Val Val Arg Asp His Lys Phe  
 130 135 140

Leu Glu Asp Glu Asp Glu Ile Asn Gly Ser Thr Lys Ser Ile Ser Met  
 145 150 155 160

Ser Pro Val Arg Val Ser Ser Gln Phe Val Glu Ser Glu Glu Thr Gly  
 165 170 175

Gly Asp Asp Lys Asp Ala Val Lys Leu Asn Lys Ser Lys Arg Ser Glu  
 180 185 190

Glu Ser Asp Phe Leu Ile Asp Ser Val Ile Arg Glu Gln Ser Gly Ser  
 195 200 205

Gln Gly Glu Thr Asn Ala Ser Ser Lys Gly Ser His Ala Val Gly Thr  
 210 215 220

Lys Leu Tyr Glu Ile Leu Gln Val Asp Val Glu Pro Gln Gln Leu Lys  
 225 230 235 240

Glu Asn Asn Ala Gly Asn Val Glu Tyr Lys Gly Pro Val Ala Ser Lys  
 245 250 255

Leu Leu Glu Ile Thr Lys Ala Ser Asp Val Glu His Thr Glu Ser Asn  
 260 265 270

Glu Ile Asp Asp Leu Asp Thr Asn Ser Phe Phe Lys Ser Asp Leu Ile  
 275 280 285

Glu Glu Asp Glu Pro Leu Ala Ala Gly Thr Val Glu Thr Gly Asp Ser  
 290 295 300

Ser Leu Asn Leu Arg Leu Glu Met Glu Ala Asn Leu Arg Arg Gln Ala  
 305 310 315 320

Ile Glu Arg Leu Ala Glu Glu Asn Leu Leu Gln Gly Ile Arg Leu Phe  
 325 330 335

Cys Phe Pro Glu Val Val Lys Pro Asp Glu Asp Val Glu Ile Phe Leu  
 340 345 350

Asn Arg Gly Leu Ser Thr Leu Lys Asn Glu Ser Asp Val Leu Ile Met  
 355 360 365

Gly Ala Phe Asn Glu Trp Arg Tyr Arg Ser Phe Thr Thr Arg Leu Thr  
 370 375 380

Glu Thr His Leu Asn Gly Asp Trp Trp Ser Cys Lys Ile His Val Pro  
 385 390 395 400

Lys Glu Ala Tyr Arg Ala Asp Phe Val Phe Phe Asn Gly Gln Asp Val  
 405 410 415

Tyr Asp Asn Asn Asp Gly Asn Asp Phe Ser Ile Thr Val Lys Gly Gly  
 420 425 430

Met Gln Ile Ile Asp Phe Glu Asn Phe Leu Leu Glu Glu Lys Trp Arg  
 435 440 445

Glu Gln Glu Lys Leu Ala Lys Glu Gln Ala Glu Arg Glu Arg Leu Ala  
 450 455 460

Glu Glu Gln Arg Arg Ile Glu Ala Glu Lys Ala Glu Ile Glu Ala Asp  
 465 470 475 480

Arg Ala Gln Ala Lys Glu Glu Ala Ala Lys Lys Lys Lys Val Leu Arg  
 485 490 495

Glu Leu Met Val Lys Ala Thr Lys Thr Arg Asp Ile Thr Trp Tyr Ile  
 500 505 510

Glu Pro Ser Glu Phe Lys Cys Glu Asp Lys Val Arg Leu Tyr Tyr Asn  
 515 520 525

Lys Ser Ser Gly Pro Leu Ser His Ala Lys Asp Leu Trp Ile His Gly  
 530 535 540

Gly Tyr Asn Asn Trp Lys Asp Gly Leu Ser Ile Val Lys Lys Leu Val  
 545 550 555 560

Lys Ser Glu Arg Ile Asp Gly Asp Trp Trp Tyr Thr Glu Val Val Ile  
 565 570 575

Pro Asp Gln Ala Leu Phe Leu Asp Trp Val Phe Ala Asp Gly Pro Pro  
 580 585 590

Lys His Ala Ile Ala Tyr Asp Asn Asn His Arg Gln Asp Phe His Ala  
 595 600 605



Ile Val Pro Asn His Ile Pro Glu Glu Leu Tyr Trp Val Glu Glu Glu  
 610 615 620

His Gln Ile Phe Lys Thr Leu Gln Glu Glu Arg Arg Leu Arg Glu Ala  
 625 630 635 640

Ala Met Arg Ala Lys Val Glu Lys Thr Ala Leu Leu Lys Thr Glu Thr  
 645 650 655

Lys Glu Arg Thr Met Lys Ser Phe Leu Leu Ser Gln Lys His Val Val  
 660 665 670

Tyr Thr Glu Pro Leu Asp Ile Gln Ala Gly Ser Ser Val Thr Val Tyr  
 675 680 685

Tyr Asn Pro Ala Asn Thr Val Leu Asn Gly Lys Pro Glu Ile Trp Phe  
 690 695 700

Arg Cys Ser Phe Asn Arg Trp Thr His Arg Leu Gly Pro Leu Pro Pro  
 705 710 715 720

Gln Lys Met Ser Pro Ala Glu Asn Gly Thr His Val Arg Ala Thr Val  
 725 730 735

Lys Val Pro Leu Asp Ala Tyr Met Met Asp Phe Val Phe Ser Glu Arg  
 740 745 750

Glu Asp Gly Gly Ile Phe Asp Asn Lys Ser Gly Met Asp Tyr His Ile  
 755 760 765

Pro Val Phe Gly Gly Val Ala Lys Glu Pro Pro Met His Ile Val His  
 770 775 780

Ile Ala Val Glu Met Ala Pro Ile Ala Lys Val Gly Gly Leu Gly Asp  
 785 790 795 800

Val Val Thr Ser Leu Ser Arg Ala Val Gln Asp Leu Asn His Asn Val  
 805 810 815

Asp Ile Ile Leu Pro Lys Tyr Asp Cys Leu Lys Met Asn Asn Val Lys  
                   820                                  825                                  830

Asp Phe Arg Phe His Lys Asn Tyr Phe Trp Gly Gly Thr Glu Ile Lys  
                   835                                  840                                  845

Val Trp Phe Gly Lys Val Glu Gly Leu Ser Val Tyr Phe Leu Glu Pro  
                   850                                  855                                  860

Gln Asn Gly Leu Phe Ser Lys Gly Cys Val Tyr Gly Cys Ser Asn Asp  
                   865                                  870                                  875                                  880

Gly Glu Arg Phe Gly Phe Phe Cys His Ala Ala Leu Glu Phe Leu Leu  
                                   885                                  890                                  895

Gln Gly Gly Phe Ser Pro Asp Ile Ile His Cys His Asp Trp Ser Ser  
                                   900                                  905                                  910

Ala Pro Val Ala Trp Leu Phe Lys Glu Gln Tyr Thr His Tyr Gly Leu  
                   915                                  920                                  925

Ser Lys Ser Arg Ile Val Phe Thr Ile His Asn Leu Glu Phe Gly Ala  
                   930                                  935                                  940

Asp Leu Ile Gly Arg Ala Met Thr Asn Ala Asp Lys Ala Thr Thr Val  
                   945                                  950                                  955                                  960

Ser Pro Thr Tyr Ser Gln Glu Val Ser Gly Asn Pro Val Ile Ala Pro  
                                   965                                  970                                  975

His Leu His Lys Phe His Gly Ile Val Asn Gly Ile Asp Pro Asp Ile  
                                   980                                  985                                  990

Trp Asp Pro Leu Asn Asp Lys Phe Ile Pro Ile Pro Tyr Thr Ser Glu  
                   995                                  1000                                  1005

Asn Val Val Glu Gly Lys Thr Ala Ala Lys Glu Ala Leu Gln Arg  
                   1010                                  1015                                  1020

Lys	Leu	Gly	Leu	Lys	Gln	Ala	Asp	Leu	Pro	Leu	Val	Gly	Ile	Ile
1025						1030					1035			
Thr	Arg	Leu	Thr	His	Gln	Lys	Gly	Ile	His	Leu	Ile	Lys	His	Ala
1040						1045					1050			
Ile	Trp	Arg	Thr	Leu	Glu	Arg	Asn	Gly	Gln	Val	Val	Leu	Leu	Gly
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Ser	Ala	Pro	Asp	Pro	Arg	Val	Gln	Asn	Asp	Phe	Val	Asn	Leu	Ala
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1175						1180					1185			
Ser	Ala	Trp	Tyr	Asp	Gly	Arg	Asp	Trp	Phe	Asn	Ser	Leu	Cys	Lys
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Gln	Val	Met	Glu	Gln	Asp	Trp	Ser	Trp	Asn	Arg	Pro	Ala	Leu	Asp
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Val Phe Phe Asn Gly Gln Asp Val Tyr Asp Asn Asn Asp Gly Asn Asp  
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<211> 1641

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<213> Solanum tuberosum

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ccttatctag atcacttcag acacagaatg aagagatatg tggatcagaa aatgctcatt  
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&lt;210&gt; 5

&lt;211&gt; 546

&lt;212&gt; PRT

&lt;213&gt; Solanum tuberosum

&lt;300&gt;

&lt;308&gt; Swiss Prot / P30924

&lt;309&gt; 1993-07-26

&lt;400&gt; 5

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Leu Asn Leu Asp Pro Thr Leu Glu Pro Tyr Leu Asp His Phe Arg His  
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Arg Met Lys Arg Tyr Val Asp Gln Lys Met Leu Ile Glu Lys Tyr Glu  
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Gly Pro Leu Glu Glu Phe Ala Gln Gly Tyr Leu Lys Phe Gly Phe Asn  
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Arg Glu Asp Gly Cys Ile Val Tyr Arg Glu Trp Ala Pro Ala Ala Gln  
 85 90 95

Glu Ala Glu Val Ile Gly Asp Phe Asn Gly Arg Asn Gly Ser Asn His  
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Met Met Glu Lys Asp Gln Phe Gly Val Trp Ser Ile Arg Ile Pro Asp  
 115 120 125

Val Asp Ser Lys Pro Val Ile Pro His Asn Ser Arg Val Lys Phe Arg  
 130 135 140

Phe Lys His Gly Asn Gly Val Trp Val Asp Arg Ile Pro Ala Trp Ile  
 145 150 155 160

Lys Tyr Ala Thr Ala Asp Ala Thr Lys Phe Ala Ala Pro Tyr Asp Gly  
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Val Tyr Trp Asp Pro Pro Pro Ser Glu Arg Tyr His Phe Lys Tyr Pro  
 180 185 190

Arg Pro Pro Lys Pro Arg Ala Pro Arg Ile Tyr Glu Ala His Val Gly  
 195 200 205

Met Ser Ser Ser Glu Pro Arg Val Asn Ser Tyr Arg Glu Phe Ala Asp  
 210 215 220

Asp Val Leu Pro Arg Ile Lys Ala Asn Asn Tyr Asn Thr Val Gln Leu  
 225 230 235 240

Met Ala Ile Met Glu His Ser Tyr Tyr Gly Ser Phe Gly Tyr His Val  
245 250 255

Thr Asn Phe Phe Ala Val Ser Asn Arg Tyr Gly Asn Pro Glu Asp Leu  
260 265 270

Lys Tyr Leu Ile Asp Lys Ala His Ser Leu Gly Leu Gln Val Leu Val  
275 280 285

Asp Val Val His Ser His Ala Ser Asn Asn Val Thr Asp Gly Leu Asn  
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Gly Phe Asp Ile Gly Gln Gly Ser Gln Glu Ser Tyr Phe His Ala Gly  
305 310 315 320

Glu Arg Gly Tyr His Lys Leu Trp Asp Ser Arg Leu Phe Asn Tyr Ala  
325 330 335

Asn Trp Glu Val Leu Arg Phe Leu Leu Ser Asn Leu Arg Trp Trp Leu  
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Glu Glu Tyr Asn Phe Asp Gly Phe Arg Phe Asp Gly Ile Thr Ser Met  
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Leu Tyr Val His His Gly Ile Asn Met Gly Phe Thr Gly Asn Tyr Asn  
370 375 380

Glu Tyr Phe Ser Glu Ala Thr Asp Val Asp Ala Val Val Tyr Leu Met  
385 390 395 400

Leu Ala Asn Asn Leu Ile His Lys Ile Phe Pro Asp Ala Thr Val Ile  
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Ala Glu Asp Val Ser Gly Met Pro Gly Leu Ser Arg Pro Val Ser Glu  
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Gly Gly Ile Gly Phe Asp Tyr Arg Leu Ala Met Ala Ile Pro Asp Lys  
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Trp Ile Asp Tyr Leu Lys Asn Lys Asn Asp Glu Asp Trp Ser Met Lys  
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Glu Val Thr Ser Ser Leu Thr Asn Arg Arg Tyr Thr Glu Lys Cys Ile  
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Ala Tyr Ala Glu Ser His Asp Gln Ser Ile Val Gly Asp Lys Thr Ile  
 485 490 495

Ala Phe Leu Leu Met Asn Lys Glu Met Tyr Ser Gly Met Ser Cys Leu  
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Thr Asp Ala Ser Pro Val Val Asp Ala Gly Ile Ala Leu Asp Lys Met  
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His Gly  
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<213> Solanum tuberosum

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<302> Improvements in or relating to plant starch composition

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<309> 1998-03-05

<310> WO 96 34968

<311> 1996-05-03

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<212> PRT

<213> Solanum tuberosum

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Glu Lys Ser Ser Tyr Asn Ser Glu Phe Arg Pro Ser Thr Val Ala Ala  
50 55 60

Ser Gly Lys Val Leu Val Pro Gly Thr Gln Ser Asp Ser Ser Ser Ser  
65 70 75 80

Ser Thr Asp Gln Phe Glu Phe Thr Glu Thr Ser Pro Glu Asn Ser Pro  
85 90 95

Ala Ser Thr Asp Val Asp Ser Ser Thr Met Glu His Ala Ser Gln Ile  
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Lys Thr Glu Asn Asp Asp Val Glu Pro Ser Ser Asp Leu Thr Gly Ser  
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Val Glu Glu Leu Asp Phe Ala Ser Ser Leu Gln Leu Gln Glu Gly Gly  
130 135 140

Lys Leu Glu Glu Ser Lys Thr Leu Asn Thr Ser Glu Glu Thr Ile Ile  
145 150 155 160

Asp Glu Ser Asp Arg Ile Arg Glu Arg Gly Ile Pro Pro Pro Gly Leu  
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Gly Gln Lys Ile Tyr Glu Ile Asp Pro Leu Leu Thr Asn Tyr Arg Gln  
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His Leu Asp Tyr Arg Tyr Ser Gln Tyr Lys Lys Leu Arg Glu Ala Ile

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Ile	Glu	Leu	Leu	Lys	Lys	Arg	Asp	Glu	Asp	Trp	Arg	Val	Gly	Asp	Ile
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610

615

620

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Ser Thr Ser Leu Ile Asp Arg Gly Ile Ala Leu His Lys Met Ile Arg  
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Asn Glu Phe Gly His Pro Glu Trp Ile Asp Phe Pro Arg Ala Glu Gln  
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His Leu Ser Asp Gly Ser Val Ile Pro Gly Asn Gln Phe Arg Tyr Asp  
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Arg Gly Leu Gln Glu Phe Asp Arg Pro Met Gln Tyr Leu Glu Asp Lys  
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Tyr Glu Phe Met Thr Ser Glu His Gln Phe Ile Ser Arg Lys Asp Glu  
755 760 765

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770 775 780

Asn Phe His Trp Thr Lys Ser Tyr Ser Asp Tyr Arg Ile Ala Cys Leu  
785 790 795 800

Lys Pro Gly Lys Tyr Pro Val Ala Leu Asp Ser Asp Asp Pro Leu Phe  
805 810 815

Gly Gly Phe Gly Arg Ile Asp His Asn Ala Glu Tyr Phe Thr Phe Glu



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<212> DNA

<213> Solanum tuberosum

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